

What we claim is:

# CLAIMS

1. A router device for use in a communication system having at least two telephone devices in communications with each other for transferring voice information therebetween through a packet switching network, the router device being coupled between one of the telephone devices and the packet switching network and for performing one of a plurality of types of compression/decompression (codec) operation on information being transferred between the telephone devices comprising:

a DSP module responsive to an analog telephone signal from one of the telephone devices and operative to convert the analog telephone signal to a digital telephone signal and further operative to packetize the digital telephone signal for transmission to a remotely-located router device, the DSP module for switching from using a first type of codec to using a second type of codec upon detection of degradation in the quality of the voice information, wherein switching between the codecs is performed while a conversation is taking place between the two telephone devices yet avoiding substantial disturbance to users of the telephone devices.

2. A router device as recited in claim 1 wherein switching between the codecs is initiated by a user of one of the telephone devices.

3. A router device as recited in claim 2 wherein a predetermined code is assigned to correspond to each codec wherein the user specifies the type of codec to be switched to by entering the predetermined code corresponding to a desired codec into one of the user telephone devices.

4. A router device as recited in claim 3 wherein the predetermined code is programmably-alterable.

5. A router device as recited in claim 1 wherein upon detecting lower bandwidth available on the packet switching network for transmitting packet therethrough, the router device for

3 switching from a codec resulting in the use of larger packet sizes to a codec resulting in smaller  
4 packet sizes.

1 6. A router device as recited in claim 5 wherein the router device for automatically detecting  
2 the lower bandwidth.

1 7. A router device as recited in claim 1 wherein upon detecting higher bandwidth available  
2 on the packet switching network for transmitting packet therethrough, the router device for  
3 switching from a codec resulting in the use of smaller packet sizes to a codec resulting in higher  
4 packet sizes.

1 8. A router device as recited in claim 5 wherein the router device for automatically detecting  
2 the higher bandwidth.

1 9. A router device as recited in claim 1 wherein the remotely-located router device detects  
2 the degradation in the quality of the voice information.

1 10. A router device as recited in claim 1 wherein the degradation in the quality of the voice  
2 information is due to loss of one or more packets.

1 11. A router device as recited in claim 10 wherein a threshold defines the number of lost  
2 packets that are tolerated triggering a decision to switch to the second type of codec.

1 12. A router device as recited in claim 11 wherein a plurality of packets form a message and  
2 each packet includes a sequence number indicative of the position of the packet with respect to  
3 other packets in the same message, the sequence numbers of the same message being in  
4 sequential order wherein a loss of packets is detected when one or more sequence numbers are  
5 missing from the received packets of the same message.

1 13. A router device as recited in claim 1 wherein the degradation in the quality of the voice  
 2 information is due to an intolerable delay associated with the time for a packet to travel between  
 3 the router device and the remotely-located router device.

Sub 5 14. A router device for use in a communication system having a first telephone device and a  
 2 first fax machine coupled to the router device, the router device responsive to telephone signals  
 3 generated by the first telephone device and fax signals generated by the first fax machine and  
 4 operative to transfer digital information, through a packet switching network, to a remotely-  
 5 located router coupled to a second telephone device and a second fax machine comprising;  
 6 a DSP module for carrying a user-initiated telephone conversation on a telephone line  
 7 connecting the first telephone device and the second telephone device through the packet  
 8 switching network, the DSP module further responsive to analog fax signals from the first fax  
 9 machine and further operative to convert the analog fax signals to digital fax signals and to  
 10 packetize the digital fax signals for transmission, through the packet switching network, to the  
 11 second fax machine,

12 wherein the fax transmission from the first fax machine to the second fax machine takes  
 13 place on the telephone line causing a temporary interruption to the telephone conversation  
 14 thereby avoiding the need for telephone connection to be disconnected prior to the fax  
 15 transmission.

1 15. A router device as recited in claim 14 wherein a fax overlay is transferred between the  
 2 router device and the remotely-located router prior to transmission of fax information  
 3 therebetween.

1 16. A router device as recited in claim 14 wherein the router device is further operative to  
 2 detect a fax tone prior to transmission of the fax information and upon completion of the fax  
 3 transmission the router device is operative to resume the telephone conversation.

Sub 6 17. A method for use in a communication system having at least two telephone devices in  
 2 communications with each other for transferring voice information therebetween through a  
 3 packet switching network, the router device being coupled between one of the telephone devices

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